DOCUMENT RESUME

ED 241 948 CS 208 209

AUTHOR Gregg, Noel
TITLE A Comparison of the Written Language Mechanical Error Patterns of College Learning Disabled, Normal and Basic Writers.
PUB DATE Nov 83
NOTE 34p.; Paper presented at the Annual Meeting of the National Council of Teachers of English (73rd, Denver, CO, November 18-23, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *College Students; Comparative Analysis; *Error Analysis (Language); Expository Writing; *Grammar; Higher Education; Language Usage; *Learning Disabilities; Low Achievement; Punctuation; Revision (Written Composition); *Writing Research; Writing Skills; *Written Language

ABSTRACT

As a step toward developing appropriate instructional techniques to help learning disabled college students, mechanical errors were compared in the expository essays and controlled stimulus passages (rewrites) of 15 learning disabled, 15 normal, and 15 basic writers at the college level. Analysis of both types of writing samples showed that learning disabled students made the most errors in all categories: word usage, sentences, and spelling. While learning disabled students' most frequent errors were omitted words, dropped endings, and omitted salient information, the most common errors by basic writers were comma omissions, faulty parallelism, and sentence fragments. The differences in error types might imply an underlying processing problem for learning disabled students and a lack of instruction for the basic writers. Differences in error patterns between the controlled stimulus passage and expository essay were also evident. When producing text in a free writing situation, for example, learning disabled students created fewer meaningless sentences but made more errors with demonstratives and prepositions. (MM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED241948

A Comparison of the Written Language Mechanical Error Patterns of College Learning Disabled, Normal and Basic Writers

Noel Gregg

University of Georgia

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Running head: College Error Patterns

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Noel Gregg

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CS208209

Abstract

College Learning disabled students frequently demonstrate a high frequency of mechanical errors in their written language. Therefore, investigations of those error patterns will contribute to a better understanding of appropriate instructional techniques to help the learning disabled college students. The purpose of this study was to compare the mechanical errors in the expository essays and controlled stimulus passages (rewrite) of college age learning disabled, normal, and basic writers. Investigation of the error patterns of each group across a production and rewrite tasks were reported along with a discussion and implications.

A Comparison of the Written Language Mechanical Error Patterns of College Learning Disabled, Normal and Basic Writers

Professionals for some time now have been attempting to devise and refine the remedial and/or compensatory strategies effective for learning disabled college students demonstrating written language deficits. Clinical observations have reported that a large number of college learning disabled students demonstrate written language deficits; however, very few empirical studies have been conducted on this population. Based on models of how successful writers and/or basic writers write, pedagogies for the college learning disabled writer are being developed. Such pedagogy, more of a "trial/error" approach, is based on the results of limited systematic inquiry into what college learning disabled writers do when they write and if they differ from the basic or normal college writer. Shaugnessy (1977) when discussing the initiation of research investigating the college basic writer concluded: "We are committed to research of a very ambitious sort." (p. 317) This committment also applies to professionals accepting the responsibility of working with college learning disabled writers in order that pedagogy be built upon a strong foundation of empirical research.

Deviations in written language development have been reported in the scant resesarch investigating the college learning disabled student (Cordoni, 1979; Herbert & Czerniewjeski, 1976; Wiig & Fleschmann, 1980; Vogel & Moran, 1982; Gregg, 1982). Many of these researchers reported that college learning disabled writers demonstrate a high percentage of mechanical errors in their writing. Gregg (1983) suggested that there may be a difference between the errors of the basic writers and the learning disabled writers. Basic writer is a term developed from the study of Shaugnessy (1977) which described the unique writing problems of underachieving college students. For the purpose of this study, basic writers are students of average mental ability who are not learning disabled and who are underachieving in written language. Their writing difficulties may be the result of poor instruction or lack of adequate experience in manipulating language.

Theorists have proposed that the focus of writing must be communication. Vygotsky (1962) in discussing the complex process of writing postulated that learning to write involved the mastering of cognitive skills within the development of new social understanding. Kinneavy (1971) developed a model based on communication theory that stressed the 'purpose' of writing. Halliday (1973) added to such propositions by stating that meaning can only be defined by language functions within a cultural context.

He proposed that adult language has simultaneous multiple functions. Such a concern of language from a pragmatics perspective led to the realization that words, phrases, and sentences derive their meaning from the context in which they occur. These recent movements in linguistics and psychology destroy the notion that we can evaluate written language in only one context or task in an half hour diagnostic session. The selection of written language assessment must be guided by the clinical hypothesis we are asking.

Researchers investigating written composition can not ignore the effect of mechanical errors to a writer-reader coherence. Little attention however has been focused on specific mechanical errors resulting from the breakdown in the writing process. It is quite obvious that mechanical errors limit the overall semantic, syntactic, or pragmatic coherence of a piece of writing. In the Brunerian sense, writing is greater than the sum of its parts; therefore, the mechanics of composition do not represent the total writing process. However, as Halstead (1981) stated: "The problem is not an either/or 'correction' vs 'content issue'" (p. 260). We know that mechanical errors cause a breakdown in the communication between writer and reader. Since the college learning disabled student demonstrates a high percentage of mechanical errors, professionals working with such students must be cognizant of the source as well

as type. For as Halstead concluded: "Like soot on the pane, error is something that gets in the way of clear vision. We know this: we are irritated by misused words and clumsy sentences just as we are by faulty logic or misused facts - and in our reading, by a printers mistake" (p. 249).

Researchers must also be sensitive to "intra" vs "inter" system errors. When describing error patterns of basic writers, Shaughnessy (1978) never documented whether the patterns held across a group and to what degree and frequency. If errors are systematic to a specified group, then "they are evidence of some idiosyncriatic rule system" (p. 256, Bartholome). However, as Shaughnessy's (1977) work illustrated, error laden work must be viewed in light of its intentional structure for it is evidence of systematic, rule governed behavior. She demonstrated that basic writers are not producing text mechanically, rather thay are making choices and forming strategies as they attempt to deal with a task. Bartholome (1980) went on to state that the attempts of basic writers to produce written language are "intermediate" systems since they mask stages to mastery of written discourse. The purpose of mechanic error analysis is to provide a diagnostic tool to aid researchers and teachers in better understanding the constraints of formulating a written text.

The purpose of this study was to compare the mechanical errors in the expository essays and controlled stimulus passages (rewrite) of college age learning disabled, normal, and basic writers. Types of errors investigated included: punctuation, word usage, sentence, and spelling errors. The two major questions under investigation included:

1. Do college age learning disabled, normal, and basic writers differ in the types and frequency of mechanical errors demonstrated in a written language sample.
2. Does the task (free writing vs rewriting) affect the type and frequency of mechanical errors exhibited by the college learning disabled, normal, or basic writers.

Methods and Procedures

Subjects

The subjects selected for study included 15 college age learning disabled writers, 15 college normal writers, and 15 college age basic writers. The population consisted of students attending Barat College, a liberal arts college situated in a suburb north of Chicago.

All subjects participating in the study demonstrated normal mental ability as measured by the Peabody Picture Vocabulary Test-Revised, Form M (Dunn & Dunn, 1981). Some research findings regarding written language indicate that

there are differences between males and females (O'Donnell, 1967; Myklebust, 1973). Therefore, all the subjects in this study were female. Socioeconomic status has been shown to be s significant variable in studies of communication accuracy (Baldwin, McFarlane, & Garvey, 1971; Spekman, 1978). Thus, an attempt to control for socioeconomic status was made by using Duncan's Socioeconomic Status Scale (1961). Occupational rankings for the head of household for each subject selected were from average to above average income.

Elasser and John-Steiner (1977) found that ethnic and cultural factors are related to written language skills. Thus, students of similar cultural and ethnic backgrounds were selected for this study. Only Caucasian subjects from middle and upper middle class homes and from similar commmunities were chosen. All the subjects were required to be users of English as a native and primary language. All subjects had normal or corrected visual acuity and normal hearing. None of the subjects participating in the study were characterized by faculty as having significant emotional adjustment problems. Their learning difficulties were not considered the result of emotional disturbance. All the subjects were required to evidence reading comprehension on the Stanford Diagnostic Reading Comprehension Test (Karlsen, Madden, & Gardner, 1976) at or above the ninth grade level in order to be included in the

study. This minimum reading level was established to insure the subjects had the ability to read the material required for the screening and experimental tasks.

Normal Writers: Students in this group were admitted to Barat College for the fall semester based on SAT or ACT scores and high school records. All the normal writers had to be beginning their freshman year at Barat College. The average age for this group was 19.1. The summary statistics are given in Table 1. The normal writers were administered three college placement tests: The Barat College Expository Writing Topic, (Vogel, 1980); the Sentence Structure Test (Educational Testing Service, 1977); and the Stanford Diagnostic Reading Comprehension Test. In order to participate in the study their scores had to be average or above average on all three measures according to the Barat Communication Skill norms (Vogel, 1980).

Basic Writers: Students in this group were admitted to Barat College for the fall semester based on SAT or ACT scores and their high school record. All the basic writers were beginning their freshman year at Barat College; the average age was 18.5. To be included they had to score below average on at least one of the writing measures also given to the normal and learning disabled writers. The basic writers could have received no special education services during their previous schooling.

Learning Disabled: All learning disabled subjects were diagnosed as such prior to this research project by personnel responsible for the Barat College Opportunities Program. The learning disabled students were administered the same three college placement tests given the basic and normal writers. In order to be included in this study, a learning disabled student was required to score below average on either the Expository writing sample or the Sentence Structure Test. Three academic levels (freshman, sophomore, junior) were represented in the learning disabled population. The average age of the learning disabled students was 23.5.

Insert Table 1 about here

Order of Task Presentation

Controlled Stimulus Passasge: The subjects were first administered a controlled stimulus passage. A controlled stimulus passage attempts to measure syntactic complexity of students' writing by controlling such writing variables as topic, verbosity, and lack of information. It is designed to study a student's ability to rewrite material that contains short, choppy sentences. The O'Donnell and Hunt (1970) Aluminum Passage was used in this study. Each of the controlled stimulus passages was analyzed by errors on the first one hundred words using the Error Analysis Chart (Gregg & Hoy, 1980). This analysis

incorporates measures from the Picture Story Language Test (Myklebust, 1965, 1973) syntax chart as well as an error chart developed by Gregg and Hoy (1980). It includes types of punctuation, word usage, sentence, and spelling errors.

Expository Essay: Each student was individually administered the Barat College Expository Writing Sample (Vogel, 1980). All students were told that if they could not read any words in the topic to ask the examiner although word meanings were not provided. There was no time limit set; however, no subject wrote for more than thirty minutes. Each of the expository essays were analyzed for errors on the first one hundred words also using the Error Analysis Chart (Gregg & Hoy, 1980).

Resesarch Design

A 2-way analysis of covariance (group by error) with repeated measures on the last factor was performed on total punctuation errors per 100 words, total word usage errors per 100 words, total sentence errors per 100 words, and total spelling errors per 100 words for both the controlled stimulus passage and expository essays.

Results

Controlled Stimulus Passage: Before analyses were performed on data from the controlled stimulus passage, Bartlett Box homogeneity of variance tests were computed for each error (Table 2). These results suggested the need to find a transformation to equalize variances for all four

to the error measures (punctuation errors: $F = 7.373$, $p < .10$, and spelling errors: $F = 0$, $p < .10$). All attempts to find a suitable transformation failed so the raw data were used in the analyses.

Insert Table 2 about here

A 2-way analysis of covariance (group x error) with repeated measures on the last factor was performed on total punctuation errors per 100 words x total word usage errors per 100 words x total sentence errors per 100 words x total spelling errors per 100 words. This analysis as reported in Table 3 indicated significant main effect for group ($F = 13.055$, $df = 2/42$, $p < .01$) and significant main effect for error ($F = 12/205$, $df = 3/126$, $p < .01$) but no significant group x error interaction. As would be expected, the main effect for error is significant since one would not expect an equal distribution of errors.

Insert Table 3 about here

To determine which variable contributed to the difference, a discriminant function analysis was done. Table 4 reports the standard discriminant function coefficients. They indicated that spelling and sentence errors contributed to the significant groups difference.

Insert Table 4 about here

Expository Essay: Prior to initiating analyses the Bartlett Box homogeniety of variance tests were computed for each error measure (Table 5). These results suggested the need to find a transformation to equalize variances for four of the error measures (punctuation errors: $F = 5.515$, p .10; Word usage errors: $F = 3.602$, $p < .10$; sentence errors: $F = 4.115$, $p < .10$; and spelling errors: $F = 15.173$, $p < .10$. All attempts to find a suitable transformation failed so the raw data were used in the analyses.

Insert Table 5 about here

A 2-way analysis of covariance (group x error) with repeated measures on the last factor was performed on: Total punctuation errors per 100 words x total word usage errors per 100 words x total sentence errors per 100 words x total spelling errors per 100 words. This analysis as reported in Table 6 indicated significant main effects for group ($F = 5.852$, $df = 2/41$, $p < .01$) and significanct main effects for error ($F = 7.5841$, $df = 3/126$, $p < .01$) but no significant group x error interaction. As with the controlled stimulus passage analyses, the main effect for error is significant since one would not expect an equal distribution of errors. To determine which variables contributed to the differences, a discriminant function

analysis was done. Table 7 reports the standardized discriminant function coefficients. They indicated that spelling contributed to the significant group differences.

Insert Table 6 about here

Insert Table 7 about here

Discussion and Implications

One of the purposes of this study was to investigate the ability of college age learning disabled, normal, and basic writers to rewrite a controlled stimulus passage. Such a task provides students with the opportunity to demonstrate writing skill divorced from the generation of content. The passages were analyzed for mechanical errors using the Error Analysis Chart (Gregg & Hoy, 1980). Analysis indicated a significant difference for group and error type. An investigation of the group means for error types indicated some interesting trends.

Punctuation errors were classified according to omission, substitution, and insertions. The learning disabled writers' mean number of punctuation errors was higher than those of either the basic writers or normals. Word usage errors included omission, insertion, substitution, and tense/gender errors. Of all the word

usage errors made across the three groups, the learning disabled writers made 53% of the errors, the basic writers 41%, and the normals 7% of the total word usage errors. Dropped endings on verbs were the most prevalent word usage errors for the learning disabled writers. Although the basic writers omitted some verb endings, They more often used the incorrect verb tense. The basic writers made more word omission errors, whereas, the learning disabled writers made a similar number of word omission, insertion, substitution, and tense/gender errors.

Sentence errors included fragments, run-ons, comma splices, parallelism, faulty reference misplaced modifiers, and sentence meaning. Of all sentence errors made across the three groups the learning disabled writers made 61% of the errors while the basic writers made 38% and the normals 2%. One category under the sentence error section was labeled "meaning of sentence." A meaningless sentence was any sentence which had no meaning for the reader. The learning disabled writers were the only group to make such errors. Following are several examples of meaningless sentences taken from several subject's controlled stimulus passage (CSP) rewrites:

> They ground Bauxite put it in tak pressure is the the tanks and form a mass. (LD, subject 1, CSP).
>
> They use filters and remain the mass liqued remains. (LD Subject 15, CSP).

Spelling errors were also recorded for each of the groups of writers. Of the total spelling errors across the three groups, the normals had no spelling errors, the basic writers made 26% of the spelling errors, and the learning disabled writers made 74% of the spelling errors. These findings support other researchers (Vogel & Moran, 1982; Cordoni, 1979) who conclude learning disabled students are significantly lacking in spelling skills.

Of the total punctuation errors made by the three groups of writers on the expository essay, the learning disabled writers made 53% of the punctuation errors, the basic writers 35%, and the normals 72% punctuation errors.

Word usage errors were a problem for both the learning disabled and basic writers of the total word usage errors across the three groups of writers, the learning disabled made 54% of the word usage errors, the basic writers 39%, and the normals eight percent word usage errors. The basic writers inserted prepositions in the wrong place more than any group. Learning disabled writers made a larger percentage of verb omisions, omissions of verb endings, and omission and substitution of demonstratives and prepositions.

The learning disabled and basic writers made more sentence errors than the normal group. Of the total sentence errors across the three groups, the learning disabled made 52% of the sentence errors, the basic

writers 39%, and the normals five percent. The learning disabled displayed a greater percentage of faulty reference errors. This is in keeping with Vogel and Moran's (1982) finding that college age learning disabled writers often display an inconsistent use of person throughout their essays. None of the groups displayed any meaningless sentence errors in their expository essay. It appeared when they were free to create a text, all three groups wrote sentences using syntactic structures with which they were most familiar. Spelling errors, as with the controlled stimulus, passage were more frequent in the essays of the learning disabled writers.

An interesting difference was seen when the error patterns of the controlled stimulus passage and those of the expository essays were compared. For example, on this controlled stimulus passage the learning disabled writer made a large percentage of meaningless sentence errors. This did not, however, occur in their expository essays. When developing their own ideas, they wrote sentences understandable to the reader. However, in the expository essays the learning disabled writers had a high percentage of omission of demonstratives and prepositions. It may be that the same demonstratives and prepositions caused the learning disabled writers difficulty in manipulating the sentences in the controlled sitmulus passage. When producing text in a free writing situation, it appears

some learning disabled writers omit prepositions and demonstratives they have difficulty using. Spelling and punctuation discriminated the learning disabled writers from the normal or basic writers on both the controlled stimulus passage and the expository essay.

In summary, the errors made more frequently by the learning disabled writers on the controlled stimulus passage and the expository essay (i.e., omitted words, dropped endings, omission of salient information) might imply underlying processing problems. Whereas, the types of errors made by the basic writers (comma omission, parallelism, fragments) might imply lack of instruction. Further research is needed to investigate the types of mechanical errors made by college learning disabled and basic writers.

One implication of this study was that the Error Analysis Chart (Gregg & Hoy, 1980) modeled after the Picture Story Language Tests's (Myklebust, 1965, 1973) syntax chart, provided specific diagnostic information for the practioner. Further research is needed to investigate more sophisticated and sensitive error analysis measures.

Also, this study reinforced the premise that no single task can evaluate the complexity of written langauge. The controlled stimulus passage forced the students to manipulate syntactic and lexical structures often foreign to their style while the expository essay examined the

production skills of the students. Each task produced similarities and differences regarding error patterns.

Several aspects of this study bear directly on the teaching of written language to college age learning disabled writers. First, the detection of errors and correction of errors are important steps that curriculums designed for learning disabled writers need to include. Teachers will also need to work with the learning disabled writer on the rewriting process of the students' own text or using techniques such as sentence combining or guided composition (Gregg, 1983). As Gregg (1982) noted, the learning disabled writers have difficulty monitoring errors with metalinguistic awareness. Helping the learning disabled writer develop automatic linguistic fluency will require researchers to investigate various forms of instruction for such students.

The findings of this study did suggest that the mechanical errors of college learning disabled, normal, and basic writers are different. Practioners developing instructional techniques for college learning disabled students must keep this in mind. A replication of this study with males and with other subgroupings of learning disabled students would help verify the results and increase their generalizability.

Acknowledgements

This research was made possible by Barat College, Lake Forest, Illinois. Special thanks must be made to Susan Vogel, Ph.D. and Mrs. Dee Konrad for all their help in the project. Above all, I thank Doris Johnson, Ph.D., Northwestern University, for all her support and professional guidance throughout this study.

About the Author

Noel Gregg is an assistant professor at the University of Georgia. She received her Ph.D. in Communication Disorders - Learning Disabilities from Northwestern University. Address: Division for the Education of Exceptional Children, College of Education, University of Georgia, Athens, Georgia 30602.

Reference Notes

Gregg, K. N. An investigation of the breakdown in certain aspects of the writing process with college age learning disabled, normal, and basic writers. Unpublished doctoral dissertation, Northwestern University, 1982.

Spekman, N. J. An investigation of the dyadic, verbal and problem-solving communication abilities of learning disabled and normal children. Unpublished doctoral dissertation, Northwestern University, 1978.

Gregg, K. N., Hoy, C. A. An investigation of the development of written language skills in school age normal and learning disabled children. Unpublished manuscript, 1980.

References

Baldwin, T., McFarlane, P., & Garvey, C. Children's communication accuracy related to race, and socio-economic status. Child Development, 1971, 40, 345-351.

Bartholomae, D. The study of error. College Composition and Communication, 1980, 31, 253-270.

Cordoni, B. An experimental program design at a university. Bulletin of the Orton Society, 1979, 29, 263-268.

Duncan, A. Socioeconomic scale. In A. Reiss, A. Duncan, P. Hunt, & C. North (Eds.), Occupations and social status, New York: Free Press of Glencoe, 1961.

Dunn, L. M., & Dunn, L. M. Peabody Picture Vocabulary Test - Revised. Circle Pines, MN: American Guidance Services, 1981.

Elasser, N., & John-Steiner, V. P. An interactionist's approach to advancing literacy. Harvard Education Review, 1977, 47(3), 355-369.

Gregg, N. College learning disabled writers: Error patterns and instructional alternatives. Journal of Learning Disabilities, 1983, 16(6), 334-338.

Halliday, M. A. K. Explorations in the functions of language. New York: Elsevier, 1973.

Halsted, I. Putting error in its place. In G. Tate, & E. P. J. Corbett (Eds.), The writing teachers' sourcebook, Oxford University Press, 1981, 244-156.

Herbert, M. A., & Czerniejewski, C. Language and learning therapy in a community college. Bulletin of the Orton Society, 1976, 26, 96-106.

Karlsen, Madden, & Gardner. Stanford Diagnostic Reading Test. New York: Harcourt, Brace, Jovanovich, Inc., 1976.

Kinneavy, J. L. A theory of discourse. New York: W. W. Norton Company, 1971.

Myklebust, H. Development and disorders of written language: Studies of normal and exceptional children (Vol. 1,2), New York: Grune and Stratton, 1965, 1973).

O'Donnell, R. C. A critique of some indices of syntactic maturity. Research in the Teaching of English, 1967, 10(1), 31-38.

O'Donnell, R. C., & Hunt, K. Syntactic maturity test. In W. T. Fagan, C. R. Cooper, & J. M. Jensen (Eds.), Measures for research and evaluation in the English language arts. Urbana, Illinois: National Council of Teachers of English, 1975.

Sentence Structure Test, College Board Descriptive Tests of Language Skills, Educational Testing Service, N. J., 1977.

Shaugnessy, M. P. Errors and expectations: A guide for the teacher of basic writing. New York: Oxford University Press, 1977.

Shaugnessy, M. Some needed resesarch on writing. College Composition and Communication, 1977, 28, 317, 388.

Vogel, S. Barat College Writing Program: Report VI: Final Report, July, 1980.

Vogel, S., & Moran, M. R. Written language disorders in learning disabled college students: A preliminary report. In W. Cruickshank, & J. Lerner (Eds.), Coming of age, volume three, the best of ACLD. Syracuse: Syracuse University Press, 1982.

Vygotsky, L. S. Thought and language. Cambridge, Mass.: MIT Press, 1962.

Wiig, E., & Fleischmann, N. Prepositional phrases, pronominalization, reflexivization, and relativisation in the language of learning disabled college students. Journal of Learning Disabilities, 1980, 13(10), 571-576.

Table 1

Descriptive Statistics for Age and Mental Ability

Variation	Mean	Standard Deviation	Minimum	Maximum
Age in years				
LD	23.50	6.70	17.11	40.30
Normal	19.10	2.06	17.20	24.90
BW	18.50	.90	17.20	21.10
PPVT standard scores				
LD	95	11.18	82	110
Normal	107	8.90	94	120
BW	98	6.05	89	118

Table 2

Diagnostic Groups and Error Measure Means, Standard Deviations, and Homogeneity of Variance for the Controlled Stimulus Passage

Variable	LD		Normal		Basic Writer		Bartlett	P
	Means	SD	Means	SD	Means	SD	Box-F	
Punctuation Error	6.067	4.044	2.200	1.612	3.067	1.792	7.373	.001*
Word Usage Error	3.267	4.0026	.533	.990	2.200	2.484	10.712	.000*
Sentence Error	2.533	2.800	.133	.352	1.600	1.242	20.942	.000*
Spelling Error	2.467	2.924	0	0	1.267	1.335	0	.000*

Table 3

Summary Table of 2-Way Analysis of Covariance (Group x Error) with Repeated Measure on the Last Factor Using the PPVT-R as a Covariate on the Controlled Stimulus Passage

Source	SS	df	MS	F
Among individuals				
within cells	292.856	41	7.143	
group	186.497	2	93.248	13.055
Within individuals				
within cells	621.867	126	4.935	
error	180.711	3	60.237	12.205
group x error	22.922	6	3.820	.774

Table 4

Standardized Discriminant Function Coefficients for the Controlled Stimulus Passage Error Analysis

Variable	Standardized Discriminant Function Coefficient
Punctuation	.210
Word Usage	.125
Sentence	.861
Spelling	.782

Table 5

Diagnostic Group and Error Measure Means, Standard Deviations, and Homogeneity of Variance for the Expository Essay

Variable	LD		Normal		BW		Bartlett	P
	Means	SD	Means	SD	Means	SD	Box-F	
*Punctuation Error	4.733	3.240	1.467	1.407	3.400	3.582	5.515	.009**
*Word-usage Error	3.200	3.858	.867	1.807	2.533	3.159	3.602	.028**
*Sentence Error	1.333	1.397	.333	.617	1.333	1.047	4.116	.017**
*Spelling Error	3.067	3.218	.200	.561	2.133	1.885	15.173	.000**

*per 100 words
**p <.10

Table 6

Summary Table of 2-Way Analysis of Covariance (Group x Error) with Repeated Measures on the Last Factor Using the PPVT-R as a Covariate on the Expository Essary

Source	SS	df	MS	F	P
Among individuals					
within cells	361.012	41	8.805		
group	103.048	2	51.524	5.852	.006*
Within individuals					
within cells	625.533	126	4.965		
error	112.950	3	37.650	7.584	.000*
group x error	22.267	6	3.711	.748	.612

*$p < .01$

Table 7

Standardized Discriminant Function Coefficients

for the Essay Error Analysis

Error Variable	Standardized Discriminant Function Coefficients
Punctuation	.244
Word usage	.287
Sentence	.264
Spelling	.882